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| 09/813,856      | 03/22/2001  | Masayuki Orihashi    | P20798              | 3437             |

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EXAMINER

DEPPE, BETSY LEE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2634

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/813,856

Applicant(s)

ORIHASHI ET AL.

Examiner

Betsy L. Deppe

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it is too long. Correction is required. See MPEP § 608.01(b).

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Digital Receiver that Corrects Non-linear Distortion.

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5. The disclosure is objected to because of the following informalities: on page 89, line 22, "1250" should be "1251" in order to be consistent with Figure 12. Appropriate correction is required.

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

7. The claims are objected to because of the following informalities:

- in claim 1, lines 2 and 4, "a" should be inserted before the first word;
- in claim 3, lines 2 and 3, "a" should be inserted before "filter";
- in claim 4, line 2, "an" should be inserted before "adjuster" and on line 3, "the amplitude" should be "an amplitude";
- in claim 5, line 2, "a" should be inserted before "quantizer";
- in claim 9, line 3, "a" should be inserted before both occurrences of "filter";
- in claim 10, line 3, "a" and "a" should be inserted before "calculator" and "arithmetical," respectively;
- in claim 11, line 2, "a" should be inserted before "signal"; and
- in claim 12, line 3, "a" should be inserted before "converter" and on line 9, "the linear" should be "a linear."

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 6 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

11. With regard to claim 6, the detailed description does not appear to describe a distortion corrector in combination with a linear quantizer. The embodiments described in the disclosure involve correcting a **non-linear** quantized signal. (For example, see Figure 3 and page 24, lines 3-18)

12. With regard to claim 12, the detailed description does not describe a distortion corrector as recited in claim 1, lines 4-8) **and** a converter as recited in claim 12, lines 3-5. Both of these limitations produce a linear signal and the detailed description does not describe using two separate components/elements to produce two linear signals. It appears that the converter in claim 12 should be part of the distortion corrector.

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13. Claims 9 -12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

14. With regard to claims 9 and 10, it is unclear how the calculator in the respective claims interfaces with the distortion converter. For example, is the output of the respective calculators provided to the distortion calculator? Or is the non-linear signal output by the quantizer provided to both the distortion corrector and the calculator in the respective claims?

15. With regard to claims 11 and 12, it is unclear what results from the converting step performed by the signal processor in claim 11, lines 5-10.

***Claim Rejections - 35 USC § 102***

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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17. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Baier et al. (US Patent No. 5,375,255). (See Figure 2; column 3, line 56 - column 4, line 26)

18. Claims 1, 3, 5, 7, 8 and 11 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tanaka et al. (US Patent No. 4,800,574). (See Figures 12 and 16; abstract; column 9, line 55 - column 10, line 12; and column 10, line 57 - column 11, line 3)

19. Claims 1, 5, and 6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by LeGrand et al. (US Patent No. 4,446,646). (See Figure 2; abstract; and column 4, lines 13-22) The analog-to-digital converter in LeGrand et al. corresponds to the linear quantizer recited in claims 5 and 6.

20. Claims 1 and 7-11 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Arens et al. (US Patent No. 5,301,364). (See Figures 1 and 2 and column 5, line 49 - column 6, line 26)

21. Claims 1 and 5 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Ichihara (US Pub. No. 2003/0086513 A1). (See Figure 1 and paragraphs [0009], [0010] and [0037])

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22. Claims 7, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Ichihara in view of Hellberg (US Patent No. 6,337,885 B1). Figure 1 of Ichihara discloses the claimed invention including a non-linear quantizer as recited in claim 7. Since Hellberg discloses that A/D converters exhibit inherent non-linearities, it is inherent that the A/D converters (4 and 5) in Ichihara perform non-linear quantization as recited in claim 7.

***Claim Rejections - 35 USC § 103***

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara in view of Hellberg as applied to claim 7 above, and further in view of Arens et al. Ichihara in view of Hellberg discloses the claimed invention including a calculator as recited in claims 9 and 10. (See 6-11 in Figure 1) However, Ichihara in view of Hellberg does not disclose converting a non-linear signal generated by a quantizer into a linear signal using a quantization characteristic of the quantizer.

Arens et al. teaches generating a control signal based on all receiver non-linearities, including the A/D non-linearities. (See column 5, lines 49-52) It would have been obvious to one of ordinary skill in the art at the time the invention was made to also incorporate the quantization characteristics of the A/D converter in Ichihara in view



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of Hellberg to generate the AGC control signal using linearizer 12 in order to compensate for all the different non-linearities in the receiver and accurately recover the data.

### ***Conclusion***

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (703) 305-4960. The examiner can normally be reached on Monday, Tuesday and Thursday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Betsy L. Deppe  
Primary Examiner  
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